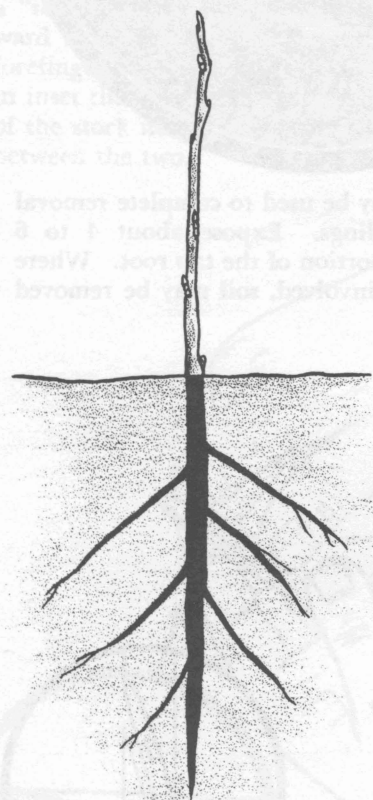


# FACT SHEET

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## WHIP GRAFTING GRAPE, PEAR, APPLE AND PECAN NURSERY STOCK

Bluefford G. Hancock and George Ray McEachern\*

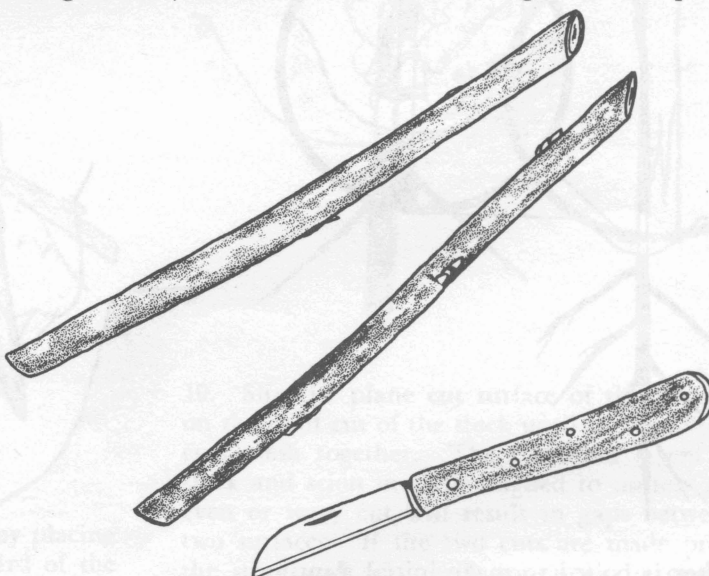


1. Seedling or cutting rootstocks, 1 to 2 years old, are usually used for whip grafting. The diameter at the upper portion of the root generally ranges from  $\frac{3}{8}$  to  $\frac{3}{4}$  inch. However, stocks up to 1 inch in diameter can be used. The season for whip grafting is February to early or mid-March in most areas, or while the stock is dormant.

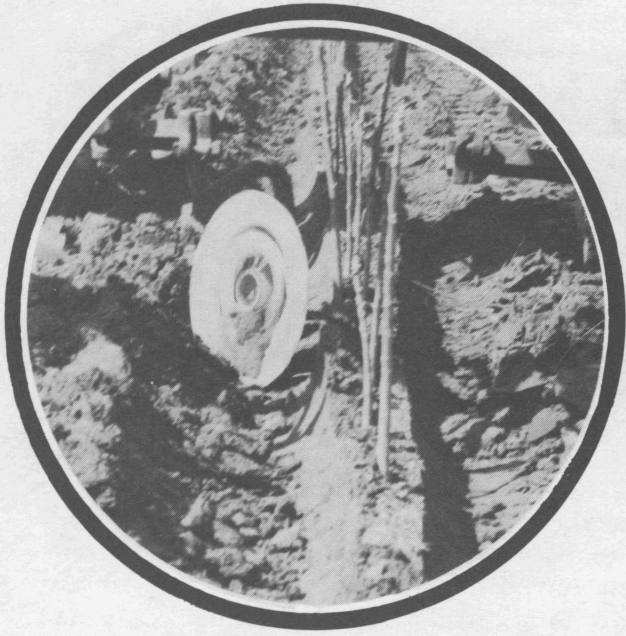
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Whip grafting (also called splice or tongue grafting) is one of the oldest methods of asexual plant propagation known. It is the predominant propagation method used on apples and is used widely on pear. Although most grapes in this country are grown from cuttings, whip grafting is the standard when they are grafted.

Whip grafting is the primary method of propagating pecan nursery stock in the Southeastern United States. This technique also is used to some extent in the Southeast and west to Louisiana for topworking larger pecan trees on the above-ground portions. Since successful whip grafting is closely correlated to the presence of high humidity, this method has not been used widely in the drier sections of Oklahoma, New Mexico and Texas. A major point for whip grafting nursery stock is the smooth, straight trees it produces.



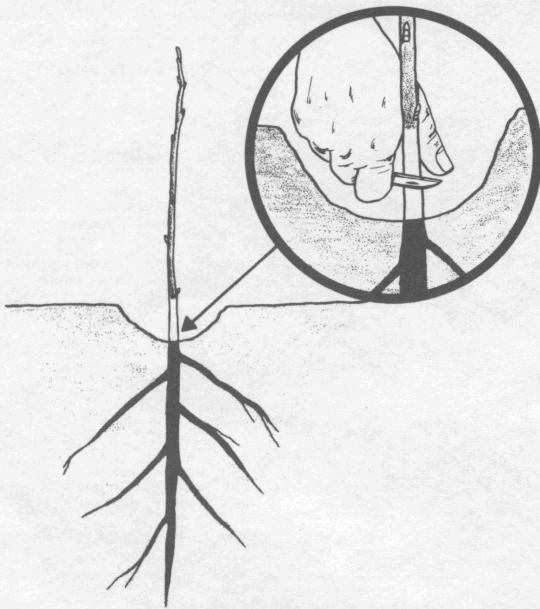
2. Select 1-year graft or scion wood in the dormant season. Size should correspond to size of available root stocks. A knife with a thin blade shaped as shown and made from high-quality steel is desirable for whip grafting. Make sure the knife will take a fine edge and hold it under a heavy work load.



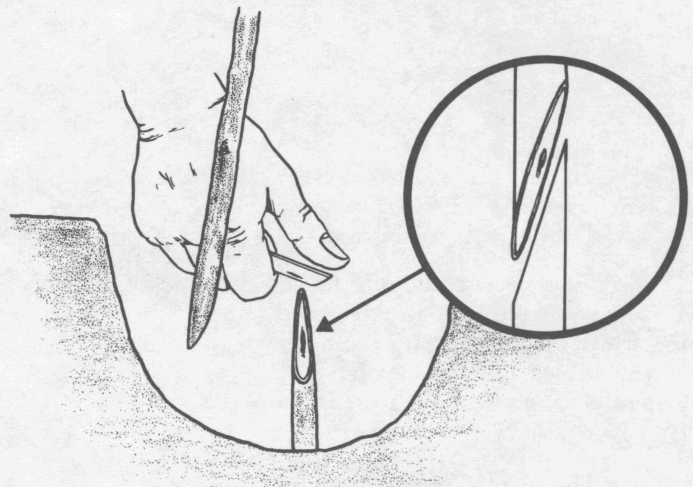
3. To facilitate easy removal of soil from around the seedlings, cut a furrow on each side of the row with a tractor-mounted disc plow. A small mold-board turning plow may be used in place of the disc for this "barring off" operation. Take special care to avoid scraping or cutting the young seedlings.



4. A hoe or fork may be used to complete removal of soil around seedlings. Expose about 4 to 6 inches of the upper portion of the tap root. Where only a few trees are involved, soil may be removed with a hoe.

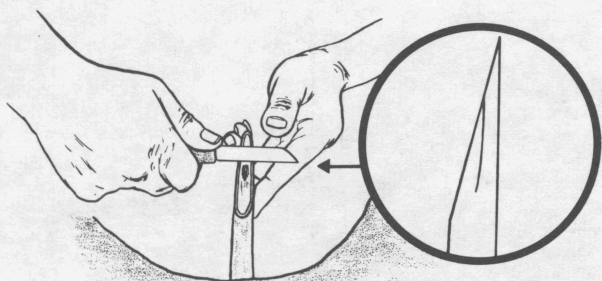


5. Grafter is poised to make initial slanting cut on rootstock. Note the slight angle of the knife blade. The stock of the seedling rootstock fits into the groove or notch formed by the thumb and forefinger of the knife hand. This stabilizes the stock and provides a guide as the cut is made.

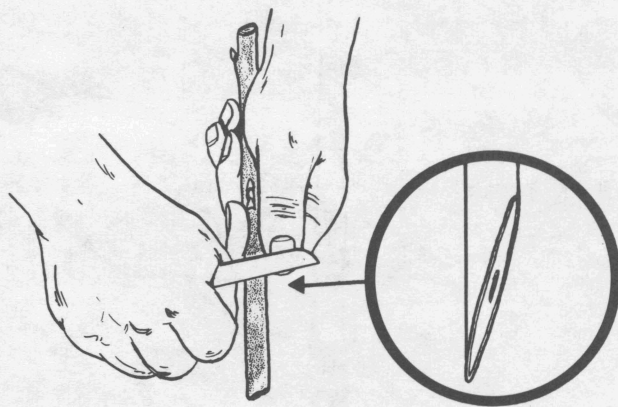


6. Pull the knife upward with the blade angled about 45 degrees, making a smooth, straight diagonal cut. This slanting, straight-plane cut should be 2 to 3 inches long. Try to cut with one stroke of the knife.

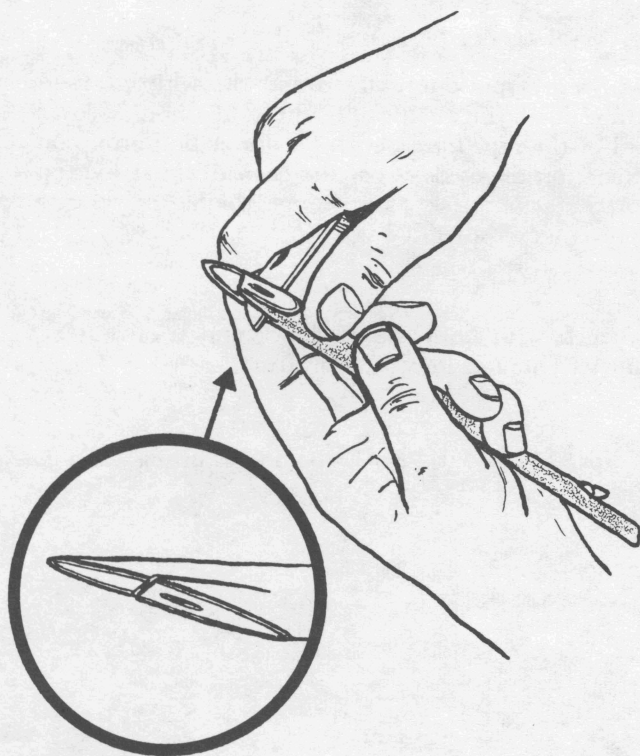




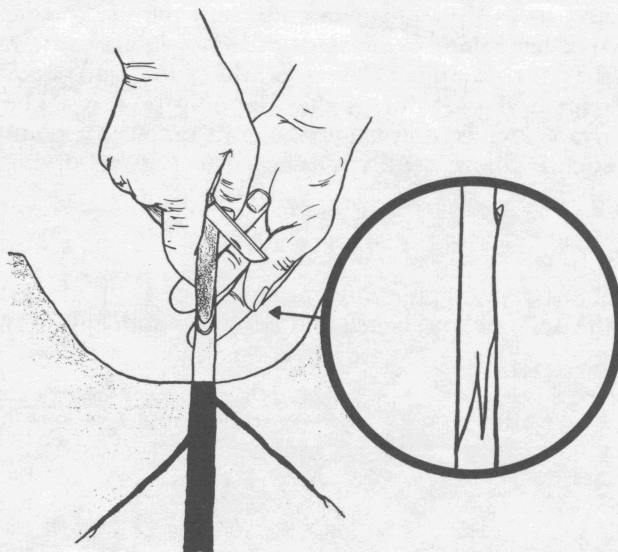
7. Place the knife at a spot on the slant cut approximately one third of the distance from the tip to the heel (or bottom) of the cut. Make a "tongue" cut by working the knife blade downward 1 to 1½ inches. Do not split the stock. Use forefinger of the left hand to brace the stock. Note in inset that the cut is neither parallel to the grain of the stock nor to the slanting cut, but is actually between the two.



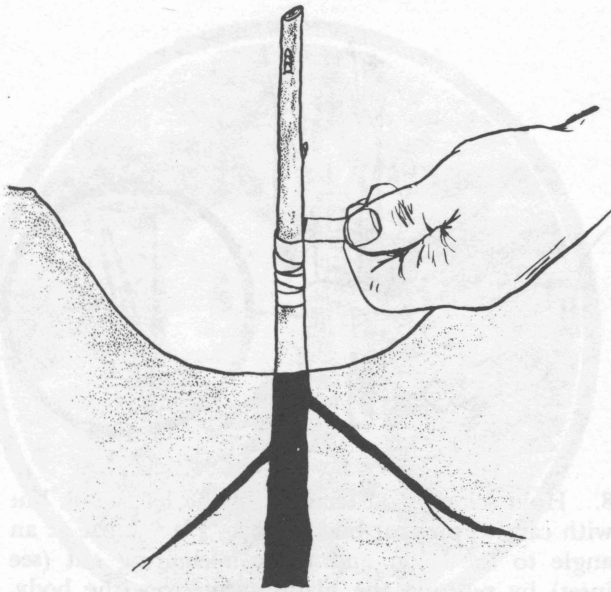
8. Hold scion wood securely in the left hand, but with care to prevent bud injury. Place knife at an angle to the scion and make a slanting cut (see inset) by pushing the blade away from the body. This straight-plane cut should be made as similar to the cut on the rootstock as possible.



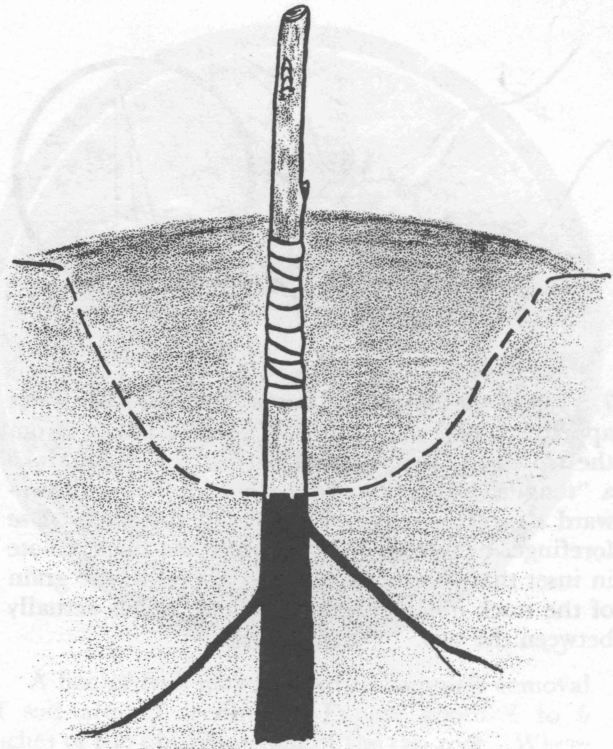
9. Make the "tongue" cut on the scion by placing the knife blade at a point about one third of the distance down from the tip. Pull the blade downward at an angle that is about halfway between the grain of the scion and plane of the slant cut. (See inset.) Note that the thumb of the knife hand serves as a guide for a controlled cut, while the forefinger of the left hand stabilizes the scion.



10. Slip the plane cut surface of the scion down on the slant cut of the stock until the two "tongue" cuts mesh together. The cambium layers of the stock and scion must be aligned to unite. An uneven or wavy cut will result in gaps between the two surfaces. If the two cuts are made properly, the stock and scion will appear to be one. (See inset.)



11. Wrap the graft securely with masking tape or a special grafting tape. Polyethylene budding tape may be used for this wrap, but may require cutting at a later date to prevent girdling. Make certain that the cambium layers of the scion and stock remain aligned during the wrapping process. The wrap extends from below the graft union to a point slightly above. This is essential to prevent drying of the cut surfaces before callousing occurs.



12. Firm moist topsoil around the whip graft to prevent drying. Ideally, the soil should cover all of the taped area, with the lower bud group on the scion exposed. Coat the cut surface at the top of the scion stick with orange shellac or wax to prevent excessive drying.

13. Grapes, apples and pears can be whip grafted at a bench with both the rootstock and scion out of the soil. Plant bench-grafted pears and apples in the nursery immediately after grafting.

14. Callus grape bench grafts in moist wood shavings for 7 days at 75° F. before planting in the nursery row.

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